

# SEQUENCE LISTING

<110> REGENERON PHARMACEUTICALS INC.

<120> RECEPTOR BASED ANTAGONISTS, AND METHODS OF MAKING AND USING

<131> REG 113-B-US

<140> 19 787,835

<141> 1999-09-22 International Filing Date

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<150> 09 313,942

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<150> 60 101,858

<151> 1996-09-25

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<223> Tag sequence

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His His His His His His  
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<400> 2

Cys Gly Thr Glu Gly Gln Val Glu Arg Phe Glu Thr Val Gly Met Glu  
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 1 5 10

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<210> 7  
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 <213> Homo sapiens

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 20 25 30  
 Pro Glu Ser Pro Val Val Gln Leu His Ser Asn Phe Thr Ala Val Cys  
 35 40 45  
 Val Leu Lys Glu Lys Cys Met Asp Tyr Phe His Val Asn Ala Asn Tyr  
 50 55 60  
 Ile Val Trp Lys Thr Asn His Phe Thr Ile Pro Lys Glu Gln Tyr Thr  
 65 70 75 80  
 Ile Ile Asn Arg Thr Ala Ser Ser Val Thr Phe Thr Asp Ile Ala Ser  
 85 90 95  
 Leu Asn Ile Gln Leu Thr Cys Asn Ile Leu Thr Phe Gly Gln Leu Glu  
 100 105 110  
 Gln Asn Val Tyr Gly Ile Thr Ile Ile Ser Gly Leu Pro Phe Glu Lys  
 115 120 125  
 Pro Lys Asn Leu Ser Cys Ile Val Asn Gln Gly Lys Lys Met Arg Cys  
 130 135 140

Glu	Tyr	Asp	Gly	Gly	Arg	Glu	Tyr	His	Leu	Glu	Tyr	Asn	Phe	Tyr	Leu
148					180					188					181
Lys	Ser	Glu	Trp	Ala	Thr	His	Lys	Phe	Ala	Asp	Phe	Lys	Ala	Lys	Arg
			188						191						190
Asp	Tyr	Pro	Thr	Ser	Cys	Thr	Val	Asp	Tyr	Ser	Thr	Val	Thr	Phe	Val
			181					188						190	
Asn	Ile	Glu	Val	Trp	Val	Glu	Ala	Glu	Asp	Ala	Leu	Gly	Lys	Val	Thr
		195					201					208			
Ser	Asp	His	Ile	Asn	Phe	Asp	Pro	Val	Tyr	Lys	Val	Lys	Pro	Asn	Pro
		210				218					221				
Pro	His	Asn	Leu	Ser	Val	Ile	Asn	Ser	Glu	Glu	Leu	Ser	Ser	Ile	Leu
228					230					235					240
Lys	Leu	Thr	Trp	Thr	Asn	Pro	Ser	Ile	Lys	Ser	Val	Ile	Ile	Leu	Lys
			245						250					258	
Tyr	Asn	Ile	Glu	Tyr	Arg	Thr	Lys	Asp	Ala	Ser	Thr	Trp	Ser	Glu	Ile
		261						265					270		
Pro	Pro	Glu	Asp	Thr	Ala	Ser	Thr	Arg	Ser	Ser	Phe	Thr	Val	Glu	Asp
		275					280					288			
Leu	Lys	Pro	Phe	Thr	Glu	Tyr	Val	Phe	Arg	Ile	Arg	Cys	Met	Lys	Glu
		290				295					300				
Asp	Gly	Lys	Gly	Tyr	Trp	Ser	Asp	Trp	Ser	Glu	Glu	Ala	Ser	Gly	Ile
305					310					315					320
Thr	Tyr	Glu	Asp	Arg	Pro	Ser	Lys	Ala	Pro	Ser	Phe	Trp	Tyr	Lys	Ile
			325							330					335
Asp	Pro	Ser	His	Thr	Glu	Gly	Tyr	Arg	Thr	Val	Glu	Leu	Val	Trp	Lys
			340					348					350		
Thr	Leu	Pro	Pro	Phe	Glu	Ala	Asn	Gly	Lys	Ile	Leu	Asp	Tyr	Glu	Val
		353					360					365			
Thr	Leu	Thr	Arg	Trp	Lys	Ser	His	Leu	Glu	Asn	Tyr	Thr	Val	Asn	Ala
		370				375					380				
Thr	Lys	Leu	Thr	Val	Asn	Leu	Thr	Asn	Asp	Arg	Tyr	Leu	Ala	Thr	Leu
385					390					395					400
Thr	Val	Arg	Asn	Leu	Val	Gly	Lys	Ser	Asp	Ala	Ala	Val	Leu	Thr	Ile
			405						410					415	
Pro	Ala	Cys	Asp	Phe	Glu	Ala	Thr	His	Pro	Val	Met	Asp	Leu	Lys	Ala
			420					425					430		
Phe	Pro	Lys	Asp	Asn	Met	Leu	Trp	Val	Glu	Trp	Thr	Thr	Pro	Arg	Glu
		435					440					445			
Ser	Val	Lys	Lys	Tyr	Ile	Leu	Glu	Trp	Cys	Val	Leu	Ser	Asp	Lys	Ala
		450				455					460				
Pro	Cys	Ile	Thr	Asp	Trp	Glu	Glu	Glu	Asp	Gly	Thr	Val	His	Arg	Thr
465					470					475					480
Tyr	Leu	Arg	Gly	Asn	Leu	Ala	Glu	Ser	Lys	Cys	Tyr	Leu	Ile	Thr	Val
			485						490					495	
Thr	Pro	Val	Tyr	Ala	Asp	Gly	Pro	Gly	Ser	Pro	Glu	Ser	Ile	Lys	Ala
			500					505					510		
Tyr	Leu	Lys	Glu	Ala	Pro	Pro	Ser	Lys	Gly	Pro	Thr	Val	Arg	Thr	Lys
		515					520					525			
Lys	Val	Gly	Lys	Asn	Glu	Ala	Val	Leu	Glu	Trp	Asp	Glu	Leu	Pro	Val
		530					535					540			
Asp	Val	Glu	Asn	Gly	Phe	Ile	Arg	Asn	Tyr	Thr	Ile	Phe	Tyr	Arg	Thr
545					550					555					560
Ile	Ile	Gly	Asn	Glu	Thr	Ala	Val	Asn	Val	Asp	Ser	Ser	His	Thr	Glu
			565						570					575	
Tyr	Thr	Leu	Ser	Ser	Leu	Thr	Ser	Asp	Thr	Leu	Tyr	Met	Val	Arg	Met
			581					585					590		
Ala	Ala	Tyr	Thr	Asp	Glu	Gly	Gly	Lys	Asp	Gly	Pro	Glu	Phe	Thr	Phe
		595					600					605			
Thr	Thr	Pro	Lys	Phe	Ala	Glu	Gly	Glu	Ile	Glu	Ser	Gly	Glu	Pro	Lys
		610				615						620			
Ser	Cys	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu	Leu

625	Leu	Gly	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	Thr
					645					681					685	
645	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp	Val
				661						685					691	
661	Ser	His	Glu	Arg	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	Glu	Val
				675						681				685		
675	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Glu	Tyr	Asn	Ser
				691						695				701		
691	Thr	Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	Glu	Asp	Trp	Leu
				701						715					721	
701	Asn	Gly	Lys	Glu	Thr	Lys	Cys	Lys	Val	Ser	Asn	Lys	Ala	Leu	Pro	Ala
				725						731					735	
725	Pro	Ile	Glu	Lys	Thr	Ile	Ser	Lys	Ala	Lys	Gly	Glu	Pro	Arg	Glu	Pro
				741						745					751	
741	Glu	Val	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Asp	Glu	Leu	Thr	Lys	Asn	Glu
				755						761					765	
755	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro	Ser	Asp	Ile	Ala
				771						775					781	
771	Val	Glu	Trp	Glu	Ser	Asn	Gly	Glu	Pro	Glu	Asn	Asn	Tyr	Lys	Thr	Thr
				791						795						801
791	Pro	Pro	Val	Leu	Asp	Ser	Asp	Gly	Ser	Phe	Phe	Leu	Tyr	Ser	Lys	Leu
				805						811					815	
805	Thr	Val	Asp	Lys	Ser	Arg	Trp	Glu	Glu	Gly	Asn	Val	Phe	Ser	Cys	Ser
				821						825					831	
821	Val	Met	His	Glu	Ala	Leu	His	Asn	His	Tyr	Thr	Glu	Lys	Ser	Leu	Ser
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835	Leu	Ser	Pro	Gly	Lys	His	His	His	His	His	His	His	His	His	His	His
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<210> 8  
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 <212> PRT  
 <213> Homo sapiens

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				20					25					30		
20	Gly	Val	Leu	Thr	Ser	Leu	Pro	Gly	Asp	Ser	Val	Thr	Leu	Thr	Cys	Pro
				35					40					45		
35	Gly	Val	Glu	Pro	Glu	Asp	Asn	Ala	Thr	Val	His	Trp	Val	Leu	Arg	Lys
				50					55					60		
50	Pro	Ala	Ala	Gly	Ser	His	Pro	Ser	Arg	Trp	Ala	Gly	Met	Gly	Arg	Arg
				70					75					80		
70	Leu	Leu	Leu	Arg	Ser	Val	Glu	Leu	His	Asp	Ser	Gly	Asn	Tyr	Ser	Cys
				85					90					95		
85	Tyr	Arg	Ala	Gly	Arg	Pro	Ala	Gly	Thr	Val	His	Leu	Leu	Val	Asp	Val
				100					105					110		
100	Pro	Pro	Glu	Glu	Pro	Glu	Leu	Ser	Cys	Phe	Arg	Lys	Ser	Pro	Leu	Ser
				115					120					125		
115	Asn	Val	Val	Cys	Glu	Trp	Gly	Pro	Arg	Ser	Thr	Pro	Ser	Leu	Thr	Thr
				131					135					141		
131	Lys	Ala	Val	Leu	Leu	Val	Arg	Lys	Phe	Glu	Asn	Ser	Pro	Ala	Glu	Asp
				146					151					156		
146	Phe	Glu	Glu	Pro	Cys	Glu	Tyr	Ser	Glu	Glu	Ser	Glu	Lys	Phe	Ser	Cys
				165					171					176		
165	Glu	Leu	Ala	Val	Pro	Glu	Gly	Asp	Ser	Ser	Phe	Tyr	Ile	Val	Ser	Met
				181					186					191		
181	Cys	Val	Ala	Ser	Ser	Val	Gly	Ser	Lys	Phe	Ser	Lys	Thr	Glu	Thr	Phe

195	200	205
Gln Gly Cys Gly Ile Leu	Gln Pro Asp Pro Pro	Ala Asn Ile Thr Val
210	215	220
Thr Ala Val Ala Arg Asn	Pro Arg Trp Leu Ser	Val Thr Trp Gln Asp
225	230	235
Pro His Ser Trp Asn Ser Ser	Phe Tyr Arg Leu Arg	Phe Gln Leu Arg
240	245	250
Tyr Arg Ala Gln Arg Ser	Lys Thr Phe Thr Thr	Trp Met Val Lys Asp
255	260	265
Leu Gln His His Cys Val	Ile His Asp Ala Trp	Ser Gly Leu Arg His
270	275	280
Val Val Gln Leu Arg Ala	Gln Gln Gln Phe Gly	Gln Gly Gln Trp Ser
285	290	295
Gln Trp Ser Pro Gln Ala	Met Gly Thr Pro Trp	Thr Gln Ser Arg Ser
300	305	310
Pro Pro Ala Gln Asn Gln	Val Ser Thr Pro Met	Gln Ala Leu Thr Thr
315	320	325
Asn Lys Asp Asp Asp Asn	Ile Leu Phe Arg Asp	Ser Ala Asn Ala Thr
330	335	340
Ser Leu Pro Val Gln Asp	Ala Gly Gln Pro Lys	Ser Cys Asp Lys Thr
345	350	355
His Thr Cys Pro Pro Cys	Pro Ala Pro Gln Leu	Leu Gly Gly Pro Ser
360	365	370
Val Phe Leu Phe Pro Pro	Lys Pro Lys Asp Thr	Leu Met Ile Ser Arg
375	380	385
Thr Pro Gln Val Thr Cys	Val Val Val Asp Val	Ser His Gln Asp Pro
390	395	400
Glu Val Lys Phe Asn Trp	Tyr Val Asp Gly Val	Glu Val His Asn Ala
405	410	415
Lys Thr Lys Pro Arg Gln	Gln Gln Tyr Asn Ser	Thr Tyr Arg Val Val
420	425	430
Ser Val Leu Thr Val Leu	His Gln Asp Trp Leu	Asn Gly Lys Gln Tyr
435	440	445
Lys Cys Lys Val Ser Asn	Lys Ala Leu Pro Ala	Pro Ile Gln Lys Thr
450	455	460
Ile Ser Lys Ala Lys Gly	Gln Pro Arg Gln Pro	Gln Val Tyr Thr Leu
465	470	475
Pro Pro Ser Arg Asp Gln	Leu Thr Lys Asn Gln	Val Ser Leu Thr Cys
480	485	490
Leu Val Lys Gly Phe Tyr	Pro Ser Asp Ile Ala	Val Gln Trp Gln Ser
495	500	505
Asn Gly Gln Pro Gln Asn	Asn Tyr Lys Thr Thr	Pro Pro Val Leu Asp
510	515	520
Ser Asp Gly Ser Phe Phe	Leu Tyr Ser Lys Leu	Thr Val Asp Lys Ser
525	530	535
Arg Trp Gln Gln Gly Asn	Val Phe Ser Cys Ser	Val Met His Gln Ala
540	545	550
Leu His Asn His Tyr Thr	Gln Lys Ser Leu Ser	Leu Ser Pro Gly Lys
555	560	565
	570	575
	580	585
		590

<210> 9  
 <211> 951  
 <212> PRT  
 <213> Homo sapiens

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Met Val Thr Leu Gln Thr	Trp Val Val Gln Ala Leu
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Thr Thr Gln Ser Thr	Gly Gln Leu Leu
20	25
Pro Gln Ser Pro Val	Val Gln Leu His
	Ser Asn Phe Thr
	Ala Val Cys



Lys	Val	Gly	Lys	Asn	Glu	Ala	Val	Leu	Glu	Trp	Asp	Gln	Leu	Pro	Val	
532						535					540					
Asp	Val	Gln	Asn	Gly	Phe	Ile	Arg	Asn	Tyr	Thr	Ile	Phe	Tyr	Arg	Thr	
545					551					555					561	
Ile	Ile	Gly	Asn	Glu	Thr	Ala	Val	Asn	Val	Asp	Ser	Ser	His	Thr	Glu	
				565						570					575	
Tyr	Thr	Leu	Ser	Ser	Leu	Thr	Ser	Asp	Thr	Leu	Tyr	Met	Val	Arg	Met	
			580						585				590			
Ala	Ala	Tyr	Thr	Asp	Glu	Gly	Gly	Lys	Asp	Gly	Pro	Glu	Phe	Thr	Phe	
		595					600					605				
Thr	Thr	Pro	Lys	Phe	Ala	Gln	Gly	Glu	Ile	Glu	Ser	Gly	Ala	Ser	Thr	
		610				615					620					
Lys	Gly	Pro	Ser	Val	Phe	Pro	Leu	Ala	Pro	Ser	Ser	Lys	Ser	Thr	Ser	
625					630					635					640	
Gly	Gly	Thr	Ala	Ala	Leu	Gly	Cys	Leu	Val	Lys	Asp	Tyr	Phe	Pro	Glu	
				645						650					655	
Pro	Val	Thr	Val	Ser	Trp	Asn	Ser	Gly	Ala	Leu	Thr	Ser	Gly	Val	His	
			660						665					670		
Thr	Phe	Pro	Ala	Val	Leu	Gln	Ser	Ser	Gly	Leu	Tyr	Ser	Leu	Ser	Ser	
		675					680						685			
Val	Val	Thr	Val	Pro	Ser	Ser	Ser	Leu	Gly	Thr	Gln	Thr	Tyr	Ile	Cys	
		690					695				700					
Asn	Val	Asn	His	Lys	Pro	Ser	Asn	Thr	Lys	Val	Asp	Lys	Lys	Val	Glu	
705					710					715					720	
Pro	Lys	Ser	Cys	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro	
				725					730						735	
Glu	Leu	Leu	Gly	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	
			740						745				750			
Asp	Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	
		755					760					765				
Asp	Val	Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	
		770				775					780					
Gly	Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Tyr	
785					790					795					800	
Asn	Ser	Thr	Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	Gln	Asp	
				805					810					815		
Trp	Leu	Asn	Gly	Lys	Glu	Tyr	Lys	Cys	Lys	Val	Ser	Asn	Lys	Ala	Leu	
			820						825				830			
Pro	Ala	Pro	Ile	Glu	Lys	Thr	Ile	Ser	Lys	Ala	Lys	Gly	Gln	Pro	Arg	
		835					840					845				
Glu	Pro	Gln	Val	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Asp	Glu	Leu	Thr	Lys	
		850				855					860					
Asn	Gln	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro	Ser	Asp	
865					870					875					880	
Ile	Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn	Asn	Tyr	Lys	
				885					890					895		
Thr	Thr	Pro	Pro	Val	Leu	Asp	Ser	Asp	Gly	Ser	Phe	Phe	Leu	Tyr	Ser	
			900						905				910			
Lys	Leu	Thr	Val	Asp	Lys	Ser	Arg	Trp	Gln	Gln	Gly	Asn	Val	Phe	Ser	
		915					920					925				
Cys	Ser	Val	Met	His	Gln	Ala	Leu	His	Asn	His	Tyr	Thr	Gln	Lys	Ser	
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Leu	Ser	Leu	Ser	Pro	Gly	Lys										
945						950										

<010> 11  
 <011> 331  
 <012> PRT  
 <013> Homo sapiens

<010> 11

Met	Val	Thr	Leu	Gln	Thr	Trp	Val	Val	Gln	Ala	Leu	Phe	Ile	Phe	Leu	
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		20					25						30			
Pro	Glu	Ser	Pro	Val	Val	Gln	Leu	His	Ser	Asn	Phe	Thr	Ala	Val	Cys	
		35					40					45				
Val	Leu	Lys	Glu	Lys	Cys	Met	Asp	Tyr	Phe	His	Val	Asn	Ala	Asn	Tyr	
		50				55					60					
Ile	Val	Trp	Lys	Thr	Asn	His	Phe	Thr	Ile	Pro	Lys	Glu	Gln	Tyr	Thr	
65				70					75					80		
Ile	Ile	Asn	Arg	Thr	Ala	Ser	Ser	Val	Thr	Phe	Thr	Asp	Ile	Ala	Ser	
		85						90						95		
Leu	Asn	Ile	Gln	Leu	Thr	Cys	Asn	Ile	Leu	Thr	Phe	Gly	Gln	Leu	Glu	
		100						105					110			
Gln	Asn	Val	Tyr	Gly	Ile	Thr	Ile	Ile	Ser	Gly	Leu	Pro	Pro	Glu	Lys	
		115					120					125				
Pro	Lys	Asn	Leu	Ser	Cys	Ile	Val	Asn	Gln	Gly	Lys	Lys	Met	Arg	Cys	
		130				135					140					
Glu	Trp	Asp	Gly	Gly	Arg	Glu	Thr	His	Leu	Glu	Thr	Asn	Phe	Thr	Leu	
145					150					155					160	
Lys	Ser	Glu	Trp	Ala	Thr	His	Lys	Phe	Ala	Asp	Cys	Lys	Ala	Lys	Arg	
				165					170					175		
Asp	Thr	Pro	Thr	Ser	Cys	Thr	Val	Asp	Tyr	Ser	Thr	Val	Tyr	Phe	Val	
		180						185					190			
Asn	Ile	Glu	Val	Trp	Val	Glu	Ala	Glu	Asn	Ala	Leu	Gly	Lys	Val	Thr	
		195					200					205				
Ser	Asp	His	Ile	Asn	Phe	Asp	Pro	Val	Tyr	Lys	Val	Lys	Pro	Asn	Pro	
		210				215					220					
Pro	His	Asn	Leu	Ser	Val	Ile	Asn	Ser	Glu	Glu	Leu	Ser	Ser	Ile	Leu	
225					230					235					240	
Lys	Leu	Thr	Trp	Thr	Asn	Pro	Ser	Ile	Lys	Ser	Val	Ile	Ile	Leu	Lys	
				245					250					255		
Tyr	Asn	Ile	Gln	Tyr	Arg	Thr	Lys	Asp	Ala	Ser	Thr	Trp	Ser	Gln	Ile	
		260						265					270			
Pro	Pro	Glu	Asp	Thr	Ala	Ser	Thr	Arg	Ser	Ser	Phe	Thr	Val	Gln	Asp	
		275					280					285				
Leu	Lys	Pro	Phe	Thr	Glu	Tyr	Val	Phe	Arg	Ile	Arg	Cys	Met	Lys	Glu	
		290				295					300					
Asp	Gly	Lys	Gly	Tyr	Trp	Ser	Asp	Trp	Ser	Glu	Glu	Ala	Ser	Gly	Ile	
305					310					315					320	
Thr	Tyr	Glu	Asp	Arg	Pro	Ser	Lys	Ala	Pro	Ser	Gly					
				325					330							

<210> 11

<211> 120

<212> PRT

<213> Homo sapiens

<400> 11

Ser	Gly	Gly	Gln	Gly	Thr	Leu	Val	Thr	Val	Ser	Ser	Ala	Ser	Thr	Lys	
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Gly	Pro	Ser	Val	Phe	Pro	Leu	Ala	Pro	Ser	Ser	Lys	Ser	Thr	Ser	Gly	
			20					25					30			
Gly	Thr	Ala	Ala	Leu	Gly	Cys	Leu	Val	Lys	Asp	Tyr	Phe	Pro	Glu	Pro	
		35				40					45					
Val	Thr	Val	Ser	Trp	Asn	Ser	Gly	Ala	Leu	Thr	Ser	Gly	Val	His	Thr	
		50				55				60						
Phe	Pro	Ala	Val	Leu	Gln	Ser	Ser	Gly	Leu	Tyr	Ser	Leu	Ser	Ser	Val	
65					70				75					80		
Val	Thr	Val	Pro	Ser	Ser	Ser	Leu	Gly	Thr	Gln	Thr	Tyr	Ile	Cys	Asn	
			85						90					95		



Val	Asn	His	Lys	Pro	Ser	Asn	Thr	Lys	Val	Asp	Lys	Lys	Val	Gln	Pro
			100					105					110		
Lys	Ser	Cys	Asp	Lys	Thr	His	Thr								
		115					120								

<210> 12  
 <211> 3139  
 <212> PRT  
 <213> Homo sapiens

Ser	Gly	Ala	Ser	Thr	Lys	Gly	Pro	Ser	Val	Phe	Pro	Leu	Ala	Pro	Cys
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Ser	Arg	Ser	Thr	Ser	Glu	Ser	Thr	Ala	Ala	Leu	Gly	Cys	Leu	Val	Lys
		20						25					30		
Asp	Tyr	Phe	Pro	Glu	Pro	Val	Thr	Val	Ser	Trp	Asn	Ser	Gly	Ala	Leu
		35					40					45			
Thr	Ser	Gly	Val	His	Thr	Phe	Pro	Ala	Val	Leu	Gln	Ser	Ser	Gly	Leu
	50					55					60				
Tyr	Ser	Leu	Ser	Ser	Val	Val	Thr	Val	Pro	Ser	Ser	Ser	Leu	Gly	Thr
	65				70					75				80	
Lys	Thr	Tyr	Thr	Cys	Asn	Val	Asp	His	Lys	Pro	Ser	Asn	Thr	Lys	Val
			85						90					95	
Asp	Lys	Arg	Val	Glu	Ser	Lys	Tyr	Gly	Pro	Pro	Cys	Pro	Ser	Cys	Pro
		100						105					110		
Ala	Pro	Glu	Phe	Leu	Gly	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys
		115					120					125			
Pro	Lys	Asp	Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val
		130				135						140			
Val	Val	Asp	Val	Ser	Gln	Glu	Asp	Pro	Glu	Val	Gln	Phe	Asn	Trp	Tyr
					150						155			160	
Val	Asp	Gly	Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu
			165						170					175	
Gln	Phe	Asn	Ser	Thr	Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His
		180						185					190		
Gln	Asp	Trp	Leu	Asn	Gly	Lys	Glu	Tyr	Lys	Cys	Lys	Val	Ser	Asn	Lys
		195					200					205			
Gly	Leu	Pro	Ser	Ser	Ile	Glu	Lys	Thr	Ile	Ser	Lys	Ala	Lys	Gly	Gln
	210					215					220				
Pro	Arg	Glu	Pro	Gln	Val	Tyr	Thr	Leu	Pro	Pro	Ser	Gln	Glu	Glu	Met
				230						235				240	
Thr	Lys	Asn	Gln	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro
			245						250					255	
Ser	Asp	Ile	Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn	Asn
		260						265					270		
Tyr	Lys	Thr	Thr	Pro	Pro	Val	Leu	Asp	Ser	Asp	Gly	Ser	Phe	Phe	Leu
		275						280				285			
Tyr	Ser	Arg	Leu	Thr	Val	Asp	Lys	Ser	Arg	Trp	Gln	Glu	Gly	Asn	Val
	290					295					300				
Phe	Ser	Cys	Ser	Val	Met	His	Glu	Ala	Leu	His	Asn	His	Tyr	Thr	Gln
	305				310					315					320
Lys	Ser	Leu	Ser	Leu	Ser	Leu	Gly	Lys							
				325											

<210> 13  
 <211> 106  
 <212> PRT  
 <213> Homo sapiens

Ser	Gly	Thr	Val	Ala	Ala	Pro	Ser	Val	Phe	Ile	Phe	Pro	Pro	Ser	Asp
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Gln	Gln	Leu	Lys	Ser	Gly	Thr	Ala	Ser	Val	Val	Cys	Leu	Leu	Asn	Asn				
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phe	Tyr	Pro	Arg	Glu	Ala	Lys	Val	Gln	Trp	Lys	Val	Asp	Asn	Ala	Leu				
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Gln	Ser	Gly	Ser	Ser	Gln	Glu	Ser	Val	Thr	Gln	Gln	Asp	Ser	Lys	Asp				
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Ser	Thr	Tyr	Ser	Leu	Ser	Ser	Thr	Leu	Thr	Leu	Ser	Lys	Ala	Asp	Tyr				
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Glu	Lys	His	Lys	Val	Tyr	Ala	Cys	Gln	Val	Thr	His	Gln	Gly	Leu	Ser				
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Ser	Pro	Val	Thr	Lys	Ser	Phe	Asn	Arg	Gly	Glu	Cys								

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 <213> Homo sapiens

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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Glu	Glu	Leu	Gln	Ala	Asn	Lys	Ala	Thr	Leu	Val	Cys	Leu	Ile	Ser	Asp				
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Phe	Tyr	Pro	Gly	Ala	Val	Thr	Val	Ala	Trp	Lys	Ala	Asp	Ser	Ser	Pro				
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Val	Lys	Ala	Gly	Val	Glu	Thr	Thr	Thr	Pro	Ser	Lys	Gln	Ser	Asn	Asn				
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Lys	Tyr	Ala	Ala	Ser	Ser	Tyr	Leu	Ser	Leu	Thr	Pro	Glu	Gln	Trp	Lys				
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Ser	His	Arg	Ser	Tyr	Ser	Cys	Gln	Val	Thr	His	Glu	Gly	Ser	Thr	Val				
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
Glu	Lys	Thr	Val	Ala	Pro	Thr	Glu	Cys	Ser										

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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Gly	Ala	Ala	Leu	Ala	Pro	Arg	Arg	Cys	Pro	Ala	Gln	Glu	Val	Ala	Arg				
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Gly	Val	Leu	Thr	Ser	Leu	Pro	Gly	Asp	Ser	Val	Thr	Leu	Thr	Cys	Pro				
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Gly	Val	Glu	Pro	Glu	Asp	Asn	Ala	Thr	Val	His	Trp	Val	Leu	Arg	Lys				
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Pro	Ala	Ala	Gly	Ser	His	Pro	Ser	Arg	Trp	Ala	Gly	Met	Gly	Arg	Arg				
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Leu	Leu	Leu	Arg	Ser	Val	Gln	Leu	His	Asp	Ser	Gly	Asn	Tyr	Ser	Cys				
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
Tyr	Arg	Ala	Gly	Arg	Pro	Ala	Gly	Thr	Val	His	Leu	Leu	Val	Asp	Val				
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
Pro	Pro	Glu	Pro	Pro	Gln	Leu	Ser	Cys	Phe	Arg	Lys	Ser	Pro	Leu	Ser				
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Asn	Val	Val	Cys	Glu	Trp	Gly	Pro	Arg	Ser	Thr	Pro	Ser	Leu	Thr	Thr				
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
Lys	Ala	Val	Leu	Leu	Val	Arg	Lys	Phe	Gln	Asn	Ser	Pro	Ala	Gln	Asp				

Phe	Gln	Glu	Pro	Cys	Gln	Tyr	Ser	Gln	Glu	Ser	Gln	Lys	Phe	Ser	Cys	
				165					170						175	
Gln	Leu	Ala	Val	Pro	Gln	Gly	Asp	Ser	Ser	Phe	Tyr	Ile	Val	Ser	Met	
			180					185					190			
Cys	Val	Ala	Ser	Ser	Val	Gly	Ser	Lys	Phe	Ser	Lys	Thr	Gln	Thr	Phe	
		195					200					205				
Gln	Gly	Cys	Gly	Ile	Leu	Gln	Pro	Asp	Pro	Pro	Ala	Asn	Ile	Thr	Val	
	210					215					220					
Thr	Ala	Val	Ala	Arg	Asn	Pro	Arg	Trp	Leu	Ser	Val	Thr	Trp	Gln	Asp	
225					230					235					240	
Pro	His	Ser	Trp	Asn	Ser	Ser	Phe	Tyr	Arg	Leu	Arg	Phe	Gln	Leu	Arg	
			245						250					255		
Tyr	Arg	Ala	Glu	Arg	Ser	Lys	Thr	Phe	Thr	Thr	Trp	Met	Val	Lys	Asp	
		260						265					270			
Leu	Gln	His	His	Cys	Val	Ile	His	Asp	Ala	Trp	Ser	Gly	Leu	Arg	His	
	275						280					285				
Val	Val	Gln	Leu	Arg	Ala	Gln	Glu	Glu	Phe	Gly	Gln	Gly	Glu	Trp	Ser	
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Glu	Trp	Ser	Pro	Glu	Ala	Met	Gly	Thr	Pro	Trp	Thr	Glu	Ser	Arg	Ser	
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Pro	Pro	Ala	Glu	Asn	Glu	Val	Ser	Thr	Pro	Met	Gln	Ala	Leu	Thr	Thr	
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Asn	Lys	Asp	Asp	Asp	Asn	Ile	Leu	Phe	Arg	Asp	Ser	Ala	Asn	Ala	Thr	
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Ser	Leu	Pro	Val	Gln	Asp	Ala	Gly									
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<212> PRT

<213> Homo sapiens

<400> 16

Met	Val	Ala	Val	Gly	Cys	Ala	Leu	Leu	Ala	Ala	Leu	Leu	Ala	Ala	Pro	
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Gly	Ala	Ala	Leu	Ala	Pro	Arg	Arg	Cys	Pro	Ala	Gln	Glu	Val	Ala	Arg	
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Gly	Val	Leu	Thr	Ser	Leu	Pro	Gly	Asp	Ser	Val	Thr	Leu	Thr	Cys	Pro	
		35					40					45				
Gly	Val	Glu	Pro	Glu	Asp	Asn	Ala	Thr	Val	His	Trp	Val	Leu	Arg	Lys	
	50				55					60						
Pro	Ala	Ala	Gly	Ser	His	Pro	Ser	Arg	Trp	Ala	Gly	Met	Gly	Arg	Arg	
65					70				75					80		
Leu	Leu	Leu	Arg	Ser	Val	Gln	Leu	His	Asp	Ser	Gly	Asn	Tyr	Ser	Cys	
			85						90				95			
Tyr	Arg	Ala	Gly	Arg	Pro	Ala	Gly	Thr	Val	His	Leu	Leu	Val	Asp	Val	
		100						105					110			
Pro	Pro	Glu	Glu	Pro	Gln	Leu	Ser	Cys	Phe	Arg	Lys	Ser	Pro	Leu	Ser	
		115					120					125				
Asn	Val	Val	Cys	Glu	Trp	Gly	Pro	Arg	Ser	Thr	Pro	Ser	Leu	Thr	Thr	
	130					135					140					
Lys	Ala	Val	Leu	Leu	Val	Arg	Lys	Phe	Gln	Asn	Ser	Pro	Ala	Glu	Asp	
145					150				155					160		
Phe	Gln	Glu	Pro	Cys	Gln	Tyr	Ser	Gln	Glu	Ser	Gln	Lys	Phe	Ser	Cys	
			165					170					175			
Gln	Leu	Ala	Val	Pro	Gln	Gly	Asp	Ser	Ser	Phe	Tyr	Ile	Val	Ser	Met	
		180						185					190			
Cys	Val	Ala	Ser	Ser	Val	Gly	Ser	Lys	Phe	Ser	Lys	Thr	Gln	Thr	Phe	
		195					200					205				
Gln	Gly	Cys	Gly	Ile	Leu	Gln	Pro	Asp	Pro	Pro	Ala	Asn	Ile	Thr	Val	
	210					215					220					

Thr Ala Val Ala Arg Ser Pro Arg Trp Leu Ser Val Thr Trp Gln Asp  
 233 237  
 Pro His Ser Trp Asn Ser Ser Phe Trp Arg Leu Arg Phe Gln Leu Arg  
 243 247  
 Tyr Arg Ala Gln Arg Ser Lys Trp Phe Thr Thr Trp Met Val Lys Arg  
 253 257  
 Leu Gln His His Cys Val Ile His Asp Ala Trp Ser Gln Leu Arg His  
 263 267  
 Val Val Gln Leu Arg Ala Gln Gln Gln Phe Gly Gln Gly Gln Trp Ser  
 273 277  
 Gln Trp Ser Pro Gln Ala Met Gly Thr Thr Gly  
 283 287

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 Met Val Lys Pro Ser Leu Pro Phe Thr Ser Leu Leu Phe Leu Gln Leu  
 1 5 10 15  
 ccc ctg ctg gga gtg ggg ctg aac acg aca att ctg acg ccc aat ggg 96  
 Pro Leu Leu Gly Val Gly Leu Asn Thr Thr Ile Leu Thr Pro Asn Gly  
 20 25 30  
 aat gaa gat aat aca gct gat ttc ttc ctg aac act atg ccc act gac 144  
 Asn Glu Asp Thr Thr Ala Asp Phe Phe Leu Thr Thr Met Pro Thr Asp  
 35 40 45  
 tcc ctc agt ggt tcc act ctg ccc ctc cca gag gtt cag tgt ttt gtg 192  
 Ser Leu Ser Val Ser Thr Leu Pro Leu Pro Glu Val Gln Cys Phe Val  
 50 55 60  
 ttc aat gtc gag tac atg aat tgc act tgg aac agc agt tct gag ccc 240  
 Phe Asn Val Gln Tyr Met Asn Cys Thr Trp Asn Ser Ser Ser Glu Pro  
 65 70 75 80  
 cag cct acc aac ctc acc ctg cat tat tgg tac aag aac tgg gat aat 268  
 Gln Pro Thr Asn Leu Thr Leu His Tyr Trp Tyr Lys Asn Ser Asp Asn  
 85 90 95  
 gat aaa gtc cag aag tgc agc cac tat cta ttc tct gaa gaa atc act 336  
 Asp Lys Val Gln Lys Cys Ser His Tyr Leu Phe Ser Gln Gln Ile Thr  
 100 105 110  
 tct ggc tgt cag ttg caa aaa aag gag atc cac ctc tac caa aca ttt 384  
 Ser Gly Cys Gln Leu Gln Lys Lys Gln Ile His Leu Tyr Gln Thr Phe  
 115 120 125  
 ggt ggt cag ctg cag gac caa cgg gaa ccc agg aca cag gcc aca cag 432  
 Val Val Gln Leu Gln Asp Pro Arg Gln Pro Arg Arg Gln Ala Thr Gln  
 130 135 140  
 atg cta aaa ctg cag aat ctg ctg atc ccc tgg gct cca gag aac cca 480  
 Met Leu Lys Leu Gln Asn Leu Val Ile Pro Trp Ala Pro Gln Asn Leu  
 145 150 155

148	150	158	160	
aca tct cgc aaa ctg agt gaa tcc cag tta gaa ctg aag tgg aac aac Thr Leu His Lys Leu Ser Glu Ser Glu Leu Glu Leu Asn Arg Asn Asn 168				516
aga ttc ttg aac cac tct ctg gac cac ctg gtc cag taa cgg aat gac Arg Phe Leu Asn His Cys Leu Glu His Leu Val Glu Tyr Arg Thr Arg 168				576
tgg gac cac agt tgg aat gaa gaa tca gtc gat tat aga cat aag ttc Trp Asp His Ser Trp Thr Glu Glu Ser Val Asp Tyr Arg His Lys Phe 195				624
tcc ttg cct agt gtc gat ggg gag aaa cgc taa aag ttt agt gtt gag Ser Leu Pro Ser Val Asp Gly Glu Lys Arg Tyr Thr Phe Arg Val Arg 210				672
agc cgc ttt aac cca ctc tgc gga agt ggt cag tat tgg agt gaa tgg Ser Arg Phe Asn Pro Leu Cys Gly Ser Ala Glu His Trp Ser Glu Trp 225				720
agc cac cca atc cac tgg ggg agc aac aat tta aaa gag aac gag tgg Ser His Pro Ile His Trp Gly Ser Asn Thr Ser Lys Glu Asn Ala Ser 245				768
tcc ggg aac atg aag gtc ctg gag gag ccc acc tgc gtc tcc gac taa Ser Gly Asn Met Lys Val Leu Glu Glu Pro Thr Cys Val Ser Asp Tyr 260				816
atg agc atc tct act tgc gag tgg aag atg aat ggt ccc acc aat tgc Met Ser Ile Ser Thr Cys Glu Trp Lys Met Asn Gly Pro Thr Asn Cys 275				864
agc acc gag ctg tgc ctg ttg taa gag ctg gtt ttt ctg ctg tcc gaa Ser Thr Glu Leu Arg Leu Leu Tyr Glu Leu Val Phe Leu Leu Ser Glu 290				912
gac cac acg tgt atc cct gag aac aac gga ggc gcg ggg tgc gtc tgc Ala His Thr Cys Ile Pro Glu Asn Asn Gly Gly Ala Gly Cys Val Cys 305				960
cac ctg ctc atg gat gac gtc gtc agt gcg gat aac tat aca ctg gac His Leu Leu Met Asp Asp Val Val Ser Ala Arg Asn Tyr Thr Leu Asp 325				1008
ctg tgg gct ggg gag cag ctg ctg tgg aag ggc tcc tcc aag ccc agc Leu Trp Ala Gly Glu Glu Leu Leu Trp Lys Gly Ser Phe Lys Pro Ser 340				1056
gag cat gtc aaa ccc agg ggc cca gga aac ctg aca gtc gac aac aat Glu His Val Lys Pro Arg Ala Pro Gly Asn Leu Thr Val His Thr Asn 365				1104
gtc tcc gac aat ctg ctg ctg aac tgg agc aac cgc tat ccc cct gac Val Ser Asp Thr Leu Leu Leu Thr Trp Ser Asn Pro Tyr Pro Pro Asp 375				1152
aat taa ctg tat aat cat ctg aac tat gga gtc aac aat ctg agt gaa Asn Tyr Leu Tyr Asn His Leu Thr Tyr Ala Val Asn Phe Trp Ser Glu 390				1200

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Asn	Asp	Pro	Ala	Asp	Thr	Arg	Ile	Tyr	Asn	Val	Thr	Tyr	Leu	Glu	Pro	
				405					410					415		
ccc	ctc	ccg	atc	gca	gcc	aga	acc	ctc	aag	tcc	ggg	acc	ccc	tac	agg	1296
Ser	Leu	Arg	Ile	Ala	Ala	Ser	Thr	Leu	Lys	Ser	Gly	Ile	Ser	Tyr	Arg	
			420					425					430			
gca	egg	gtg	agg	goc	tgg	gct	cag	tgc	tat	aac	acc	acc	tgg	agt	gag	1344
Ala	Arg	Val	Arg	Ala	Trp	Ala	Gln	Cys	Tyr	Asn	Thr	Thr	Trp	Ser	Glu	
		435					440					445				
tgg	agc	ccc	agc	acc	aag	tgg	cac	aac	tcc	tac	agg	gag	ccc	ctc	gag	1392
Trp	Ser	Pro	Ser	Thr	Lys	Trp	His	Asn	Ser	Tyr	Arg	Glu	Pro	Phe	Glu	
	450					455					460					
cag	ccc	gga	gac	aaa	acc	cac	aca	tgc	cca	ccg	tgc	cca	gca	ccc	gaa	1440
Gln	Ser	Gly	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu	
	465					470				475					480	
ctc	ctg	ggg	gga	ccg	tca	gtc	ttc	ctc	ttc	ccc	cca	aaa	ccc	aag	gac	1488
Leu	Leu	Gly	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	
				485				490					495			
acc	ctc	atg	atc	tcc	egg	acc	ccc	gag	gtc	aca	tgc	gtg	gtg	gtg	gac	1536
Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp	
			500					505					510			
gtg	agc	cac	gaa	gac	ccc	gag	gtc	aag	ttc	aac	tgg	tac	gtg	gac	ggc	1584
Val	Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	Gly	
	515					520					525					
gtg	gag	gtg	tac	aat	goc	aag	aca	aag	ccg	egg	gag	gag	cag	tac	aac	1632
Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Tyr	Asn	
	530					535					540					
agc	aag	tac	ggc	gtg	gtc	agc	gtc	ctc	acc	gtc	ccg	cac	cag	gac	tgg	1680
Ser	Thr	Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	Gln	Asp	Trp	
	545					550				555					560	
ccg	aat	ggc	aag	gag	tac	aag	tgc	aag	gtc	tcc	aac	aaa	goc	ccc	cca	1728
Leu	Asn	Gly	Lys	Glu	Tyr	Lys	Cys	Lys	Val	Ser	Asn	Lys	Ala	Leu	Pro	
				565				570					575			
goc	ccc	atc	gag	aaa	acc	att	tcc	aaa	goc	aaa	ggg	cag	ccc	cga	gaa	1776
Ala	Pro	Ile	Glu	Lys	Thr	Ile	Ser	Lys	Ala	Lys	Gly	Gln	Pro	Arg	Glu	
			580					585					590			
cca	cag	gtg	tac	acc	ctg	ccc	cca	tcc	egg	gag	gag	atg	acc	aag	aac	1824
Pro	Gln	Val	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Glu	Glu	Met	Thr	Lys	Asn	
			595				600					605				
cag	gtc	agc	ctg	acc	tgc	ctg	gtc	aaa	ggc	ctc	tat	ccc	agg	gac	atc	1872
Gln	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro	Ser	Asp	Ile	
	610					615					620					
goc	gtg	gag	tgg	gag	agc	aat	ggg	cag	ccg	gag	aac	aac	tac	aag	acc	1920
Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn	Asn	Tyr	Lys	Thr	
	625				630					635					640	

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 thr ggc ggc val leu asn ser met met gly ser phe phe leu tyr ser lys  
 648 661 688  
 ctc aac gtt gac aag agc agc tcc cag cag gag aac gtc ttc tca tgg 2016  
 leu thr val met lys ser arg trp gln gln gly asn val phe ser cys  
 660 666 670  
 tcc gtt atg cat gag ggt ctt ccc aac ccc tac aag cag aag agc ctc 2064  
 ser val met his glu ala leu his asn his tyr thr gln lys ser leu  
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 690

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 <213> Homo sapiens

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 20 25 30  
 Asn Glu Asp Thr Thr Ala Asp Phe Phe Leu Thr Thr Met Pro Thr Asp  
 35 40 45  
 Ser Leu Ser Val Ser Thr Leu Pro Leu Pro Glu Val Gln Cys Phe Val  
 50 55 60  
 Phe Asn Val Glu Tyr Met Asn Cys Thr Trp Asn Ser Ser Ser Glu Pro  
 65 70 75 80  
 Gln Pro Thr Asn Leu Thr Leu His Tyr Trp Tyr Lys Asn Ser Asp Asn  
 85 90 95  
 Asp Lys Val Gln Lys Cys Ser His Tyr Leu Phe Ser Glu Glu Ile Thr  
 100 105 110  
 Ser Gly Cys Gln Leu Gln Lys Lys Glu Ile His Leu Tyr Gln Thr Phe  
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 Val Val Gln Leu Gln Asp Pro Arg Glu Pro Arg Arg Gln Ala Thr Gln  
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 Ser His Pro Ile His Trp Gly Ser Asn Thr Ser Lys Glu Asn Ala Ser  
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 Ser Gly Asn Met Lys Val Leu Gln Glu Pro Thr Cys Val Ser Asp Tyr  
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Thr	Leu	His	Lys	Leu	Ser	Glu	Ser	Gln	Leu	Glu	Leu	Asn	Tyr	Asn	Asn	
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Arg	Phe	Leu	Asn	His	Cys	Leu	Glu	His	Leu	Val	Gln	Tyr	Arg	Thr	Asp	
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ttg	gac	cac	agg	ttg	act	gaa	caa	cca	gtg	gat	tat	aga	cat	aag	ttc	624
Trp	Asp	His	Ser	Trp	Thr	Glu	Gln	Ser	Val	Asp	Tyr	Arg	His	Lys	Phe	
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Ser	Leu	Pro	Ser	Val	Asp	Gly	Gln	Lys	Arg	Tyr	Thr	Phe	Arg	Val	Arg	
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Ser	Arg	Phe	Asn	Pro	Leu	Cys	Gly	Ser	Ala	Gln	His	Trp	Ser	Glu	Trp	
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Ser	His	Pro	Ile	His	Trp	Gly	Ser	Asn	Thr	Ser	Lys	Glu	Asn	Ala	Ser	
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Ser	Gly	Asn	Met	Lys	Val	Leu	Gln	Glu	Pro	Thr	Cys	Val	Ser	Asp	Tyr	
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Met	Ser	Ile	Ser	Thr	Cys	Glu	Trp	Lys	Met	Asn	Gly	Pro	Thr	Asn	Cys	
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Ala	His	Thr	Cys	Ile	Pro	Glu	Asn	Asn	Gly	Gly	Ala	Gly	Cys	Val	Cys	
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His	Leu	Leu	Met	Arg	Arg	Val	Val	Ser	His	Asp	Asn	Tyr	Thr	Leu	Arg	
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Leu	Trp	Ala	Gly	Gln	Gln	Leu	Leu	Trp	Lys	Gly	Ser	Phe	Lys	Pro	Ser	
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gag	cat	gtg	aaa	ccc	agg	gcc	cca	gga	aac	ctg	aca	gtt	caa	acc	aat	1104
Glu	His	Val	Lys	Pro	Arg	Ala	Pro	Gly	Asn	Leu	Thr	Val	His	Thr	Asn	
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gtc	ccc	gac	act	ctg	ctg	ctg	acc	egg	agg	aac	ctg	tat	ccc	ccc	gac	1152
Val	Ser	Asp	Thr	Leu	Leu	Leu	Thr	Trp	Ser	Asn	Pro	Tyr	Pro	Pro	Asp	
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aat	caa	ctg	cat	aat	cat	ccc	acc	tat	gca	gtc	aac	att	egg	aga	gaa	1200
Asn	Tyr	Leu	Tyr	Asn	His	Leu	Thr	Tyr	Ala	Val	Asn	Ile	Trp	Ser	Glu	
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aac	gac	ccg	gca	gat	tcc	aga	atc	tat	aac	gtg	acc	taa	cta	gaa	ccc	1248
Asn	Asp	Pro	Ala	Asp	Phe	Arg	Ile	Tyr	Asn	Val	Thr	Tyr	Leu	Glu	Pro	
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Ser	Leu	Arg	Ile	Ala	Ala	Ser	Thr	Leu	Lys	Ser	Gly	Ile	Ser	Tyr	Arg	
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Ala	Arg	Val	Arg	Ala	Trp	Ala	Gln	Ser	Tyr	Asn	Thr	Thr	Trp	Ser	Glu	
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Trp	Ser	Pro	Ser	Thr	Lys	Trp	His	Asn	Ser	Tyr	Arg	Glu	Pro	Phe	Glu	
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Gln	Ser	Gly	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu	
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Val	Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	Gly	
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Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Tyr	Asn	
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Leu	Asn	Gly	Lys	Glu	Tyr	Lys	Cys	Lys	Val	Ser	Asn	Lys	Ala	Leu	Pro	
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cca	cag	gtg	tac	acc	ctg	ccc	cca	ccc	ggg	gat	gag	ctg	acc	aag	aac	1824
Pro	Gln	Val	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Asp	Glu	Leu	Thr	Lys	Asn	
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Gln	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro	Ser	Asp	Ile	
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gcc	gtg	gag	tgg	gag	agg	aat	ggg	cag	ccg	gag	aac	aac	tac	aag	acc	1920
Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn	Asn	Tyr	Lys	Thr	
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Thr	Pro	Pro	Val	Leu	Asp	Ser	Asp	Gly	Ser	Phe	Phe	Leu	Tyr	Ser	Lys	
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Leu	Thr	Val	Asp	Lys	Ser	Arg	Trp	Gln	Gln	Gly	Asn	Val	Phe	Ser	Cys	
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Asn	Glu	Asp	Thr	Thr	Ala	Asp	Phe	Phe	Leu	Thr	Thr	Met	Pro	Thr	Asp	
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Ser	Leu	Ser	Val	Ser	Thr	Leu	Pro	Leu	Pro	Glu	Val	Gln	Cys	Phe	Val	
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Phe	Asn	Val	Glu	Tyr	Met	Asn	Cys	Thr	Trp	Asn	Ser	Ser	Ser	Glu	Pro	
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Gln	Pro	Thr	Asn	Leu	Thr	Leu	His	Tyr	Trp	Tyr	Lys	Asn	Ser	Asp	Asn	
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Asp	Lys	Val	Gln	Lys	Cys	Ser	His	Tyr	Leu	Phe	Ser	Glu	Glu	Ile	Thr	
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Ser	Gly	Cys	Gln	Leu	Gln	Lys	Lys	Glu	Ile	His	Leu	Tyr	Gln	Thr	Phe	
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Val	Val	Gln	Leu	Gln	Asp	Pro	Arg	Glu	Pro	Arg	Arg	Gln	Ala	Thr	Gln	
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Met	Leu	Lys	Leu	Gln	Asn	Leu	Val	Ile	Pro	Trp	Ala	Pro	Glu	Asn	Leu	
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[illegible]

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 Gly Ala Ala Leu Ala Pro Arg Arg Cys Pro Ala Gln Gln Val Ala Arg  
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 Gly Val Leu Thr Ser Leu Pro Gly Asp Ser Val Thr Leu Thr Cys Pro  
 35 40 45  
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 Gly Val Gln Pro Gln Asp Asn Ala Thr Val His Trp Val Leu Arg Lys  
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 ccg gcc gca ggc tcc cac ccc agc aga tgg gcc ggc atg gga agg agg 240  
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 Leu Leu Leu Arg Ser Val Gln Leu His Asp Ser Gly Asn Tyr Ser Cys  
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 Tyr Arg Ala Gly Arg Pro Ala Gly Thr Val His Leu Leu Val Asp Val  
 100 105 110  
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 Pro Pro Gln Gln Pro Gln Leu Ser Cys Phe Arg Lys Ser Pro Leu Ser  
 115 120 125  
 aat gcc gtt tgt gag tgg ggt cct cgg agc acc cca tcc ctg aag aca 432  
 Asn Val Val Cys Gln Trp Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr  
 130 135 140  
 aag gcc gtg ctg ttg gtg agg aag ttt cag aac agt ccg gcc gaa gac 480  
 Lys Ala Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala Gln Asp  
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 Phe Gln Gln Pro Cys Gln Tyr Ser Gln Gln Ser Gln Lys Phe Ser Cys  
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 Gln Leu Ala Val Pro Gln Gly Arg Ser Ser Phe Tyr Ile Val Ser Met  
 180 185 190 195

[illegible]

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ccg	gaa	tgg	gca	aca	cac	aag	ttt	gct	gat	tgc	aaa	gca	aaa	cgg	gac	1488
Ser	Glu	Tyr	Ala	Thr	His	Lys	Phe	Ala	Asp	Cys	Lys	Ala	Lys	Arg	Asp	
			485						490					495		
acc	ccc	acc	tca	tgc	act	gtt	gat	tat	tcg	act	gtg	tac	ttc	gtc	aac	1536
Thr	Pro	Thr	Ser	Cys	Thr	Val	Asp	Tyr	Ser	Thr	Val	Tyr	Phe	Val	Asn	
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Ile	Glu	Val	Trp	Val	Glu	Ala	Glu	Asn	Ala	Leu	Gly	Lys	Val	Thr	Ser	
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gat	cat	atc	aat	ttt	gat	ccg	gta	tat	aaa	gtg	aag	ccc	aat	ccg	cca	1632
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Asn	Ile	Gln	Tyr	Arg	Thr	Lys	Asp	Ala	Ser	Thr	Trp	Ser	Gln	Ile	Pro	
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Pro	Glu	Asp	Thr	Ala	Ser	Thr	Arg	Ser	Ser	Phe	Thr	Val	Gln	Asp	Leu	
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Lys	Pro	Phe	Thr	Glu	Tyr	Val	Phe	Arg	Ile	Arg	Cys	Met	Lys	Glu	Asp	
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Tyr	Glu	Asp	Arg	Pro	Ser	Lys	Ala	Pro	Ser	Phe	Trp	Tyr	Lys	Ile	Asp	
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cca	ccc	cat	act	caa	ggc	tac	aga	act	gta	caa	ccc	gtg	tcg	aag	aca	2016
Pro	Ser	His	Thr	Gln	Gly	Tyr	Arg	Thr	Val	Gln	Leu	Val	Tyr	Lys	Thr	
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Lys	Leu	Thr	Val	Asn	Leu	Thr	Asn	Asp	Arg	Tyr	Leu	Ala	Thr	Leu	Thr	
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Pro	Lys	Asp	Asn	Met	Leu	Trp	Val	Gln	Trp	Thr	Thr	Pro	Arg	Gln	Ser	
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Pro	Val	Tyr	Ala	Asp	Gly	Pro	Gly	Ser	Pro	Glu	Ser	Ile	Lys	Ala	Tyr	
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acc	cca	aag	ttt	ggt	caa	gga	gaa	att	gaa	taa	ggg	ggc	gac	aaa	aat	2882
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cac	aca	tgG	cca	ccg	tgc	cca	gca	cca	gaa	ctc	ctg	ggg	gga	ccg	cca	2883
His	Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu	Leu	Leu	Gly	Gly	Pro	Ser	
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gtc	ttc	ctc	ttc	ccc	cca	aaa	ccc	aag	gac	acc	ctc	atg	acc	ccc	ggg	2928
Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	Thr	Leu	Met	Ile	Ser	Arg	
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acc	ccG	gag	gtc	aca	tgc	gtg	gtg	gtg	gac	gtg	agg	cac	gaa	gac	ggt	2976
Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	His	Glu	Asp	Pro	
			980					985					990			
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Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	Gly	Val	Glu	Val	His	Asn	Ala	
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Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Tyr	Asn	Ser	Thr	Tyr	Arg	Val	Val	
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Ile	Ser	Lys	Ala	Lys	Gly	Gln	Pro	Arg	Glu	Pro	Gln	Val	Tyr	Thr	Leu	
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Pro	Pro	Ser	Arg	Asp	Glu	Leu	Thr	Lys	Asn	Gln	Val	Ser	Leu	Thr	Cys	
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Arg	Trp	Gln	Gln	Gly	Asn	Val	Phe	Ser	Cys	Ser	Val	Met	His	Glu	Ala	
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1155

1161

1165

tga

3507

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&lt;013&gt; Homo sapiens

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Tyr	Arg	Ala	Gly	Arg	Pro	Ala	Gly	Thr	Val	His	Leu	Leu	Val	Asp	Val
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Lys	Ala	Val	Leu	Leu	Val	Arg	Lys	Phe	Gln	Asn	Ser	Pro	Ala	Glu	Asp
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Gln	Leu	Ala	Val	Pro	Glu	Gly	Asp	Ser	Ser	Phe	Tyr	Ile	Val	Ser	Met
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Cys	Val	Ala	Ser	Ser	Val	Gly	Ser	Lys	Phe	Ser	Lys	Thr	Gln	Thr	Phe
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Ile	Gly	Asn	Glu	Thr	Ala	Val	Asn	Val	Asp	Ser	Ser	His	Thr	Glu	Tyr
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 Ala Tyr Thr Asp Glu Gly Gly Lys Asp Gly Pro Glu Phe Thr Phe Thr  
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 Thr Pro Lys Phe Ala Gln Gly Glu Ile Glu Ser Gly Gly Asp Lys Thr  
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 Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr  
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 Gly Ala Ala Leu Ala Pro Arg Arg Cys Pro Ala Gln Glu Val Ala Arg  
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 Gly Val Leu Thr Ser Leu Pro Gly Asp Ser Val Thr Leu Thr Cys Pro  
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 Gly Val Glu Pro Glu Asp Asn Ala Thr Val His Tyr Val Leu Arg Lys  
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gta Val	aat Asn 370	gct Ala	aat Asn	tac Tyr	att Ile	gtc Val 375	tgg Trp	aaa Lys	aca Thr	aac Asn	cat His 380	ttt Phe	act Thr	att Ile	ccc Pro	1152
aag Lys 385	gag Glu	caa Gln	tat Tyr	act Thr	acc Ile	ata Ile	aac Asn	aga Arg	aca Thr	gca Ala 395	ccc Ser	agt Ser	gtc Val	acc Thr	ttt Phe 400	1200
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ttg Leu	ccc Pro	cca Pro	gaa Glu	aaa Lys	ccc Pro	aaa Lys	aat Asn	ttg Leu	agt Ser	tgc Cys	att Ile	gtg Val	aac Asn	gag Glu	ggg Gly	1344
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aca Thr	aac Asn	ttc Phe	act Thr	tta Leu	aaa Lys	ccc Ser	gaa Glu	tgg Trp	gca Ala	aca Thr	cac His	aag Lys	ttt Phe	gtt Ala	gat Asp 430	1440
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act act cca agg gaa tct gta aag aaa tat ata ctt gag tgg tgt gtg Thr Thr Pro Arg Gln Ser Val Lys Lys Tyr Ile Ile Gln Trp Cys Val 755 760 765				2304
tta tca gat aaa gca ccc tgc atc aca gac tgg caa caa gaa gat ggt Leu Ser Asp Lys Ala Pro Cys Ile Thr Asp Trp Gln Gln Gln Asp Gly 770 775 780				2352
acc gtg cac tgc acc tat tta aga ggg aac tta gca gag agt aaa tgc Thr Val His Arg Thr Tyr Leu Arg Gly Asn Leu Ala Gln Ser Lys Cys 785 790 795				2400

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Tyr	Ile	Ile	Thr	Val	Thr	Pro	Val	Tyr	Ala	Asp	Gly	Pro	Gly	Ser	Pro	
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gaa	ccc	ata	aag	gca	tac	ctt	aaa	caa	gct	cca	cct	ccc	aaa	gga	cct	2496
Glu	Ser	Ile	Lys	Ala	Tyr	Leu	Lys	Gln	Ala	Pro	Pro	Ser	Lys	Gly	Pro	
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Thr	Val	Arg	Thr	Lys	Lys	Val	Gly	Lys	Asn	Glu	Ala	Val	Ile	Glu	Trp	
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gac	caa	ctt	cct	gtc	gat	gtt	cag	aat	gga	ttt	atc	aga	aat	tat	act	2592
Asp	Gln	Leu	Pro	Val	Asp	Val	Gln	Asn	Gly	Phe	Ile	Arg	Asn	Tyr	Thr	
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ata	ctt	tat	aga	acc	atc	att	gga	aat	gaa	act	gct	gtg	aat	gtg	gat	2640
Ile	Phe	Tyr	Arg	Thr	Ile	Ile	Gly	Asn	Glu	Thr	Ala	Val	Asn	Val	Asp	
	865				870				875						880	
tct	ccc	cac	aca	gaa	tat	aca	tig	ccc	tct	tig	act	agt	gac	aca	tig	2688
Ser	Ser	His	Thr	Glu	Tyr	Thr	Leu	Ser	Ser	Leu	Thr	Ser	Asp	Thr	Leu	
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tac	atg	gta	cga	atg	gca	gca	tac	aca	gat	gaa	ggt	ggg	aag	gat	ggt	2736
Tyr	Met	Val	Arg	Met	Ala	Ala	Tyr	Thr	Asp	Glu	Gly	Gly	Lys	Asp	Gly	
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cca	gaa	ttc	act	ttt	act	acc	cca	aag	ttt	gct	caa	gga	gaa	att	gaa	2784
Pro	Glu	Phe	Thr	Phe	Thr	Thr	Pro	Lys	Phe	Ala	Gln	Gly	Glu	Ile	Glu	
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Ser	Gly	Gly	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu	
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Leu	Leu	Gly	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	
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Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp	
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Val	Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	Gly	
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Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Tyr	Asn	
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Ser	Thr	Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	Gln	Asp	Trp	
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Leu	Asn	Gly	Lys	Glu	Tyr	Lys	Cys	Lys	Val	Ser	Asn	Lys	Ala	Leu	Pro	
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 Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn  
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 Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu  
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 Gly Val Glu Pro Glu Asp Asn Ala Thr Val His Trp Val Leu Arg Lys  
 50 55 60  
 Pro Ala Ala Gly Ser His Pro Ser Arg Trp Ala Gly Met Gly Arg Arg  
 65 70 75 80  
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 Tyr Arg Ala Gly Arg Pro Ala Gly Thr Val His Leu Leu Val Asp Val  
 100 105 110  
 Pro Pro Glu Glu Pro Gln Leu Ser Cys Phe Arg Lys Ser Pro Leu Ser  
 115 120 125  
 Asn Val Val Cys Glu Trp Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr  
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 Lys Ala Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala Glu Asp  
 145 150 155 160  
 Phe Gln Glu Pro Cys Gln Tyr Ser Gln Glu Ser Gln Lys Phe Ser Cys  
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Gln	Leu	Ala	Val	Pro	Gln	Gly	Asp	Ser	Ser	Phe	Tyr	Ile	Val	Ser	Met	
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Cys	Val	Ala	Ser	Ser	Val	Gly	Ser	Lys	Phe	Ser	Lys	Thr	Gln	Thr	Phe	
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Pro	His	Ser	Trp	Asn	Ser	Ser	Phe	Tyr	Arg	Leu	Arg	Phe	Glu	Leu	Arg	
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Val	Val	Gln	Leu	Arg	Ala	Gln	Glu	Glu	Phe	Gly	Gln	Gly	Glu	Trp	Ser	
	290					295					300					
Glu	Trp	Ser	Pro	Glu	Ala	Met	Gly	Thr	Pro	Trp	Thr	Glu	Ser	Arg	Ser	
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Pro	Pro	Ala	Glu	Asn	Glu	Val	Ser	Thr	Pro	Met	Glu	Leu	Leu	Asp	Pro	
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Cys	Gly	Tyr	Ile	Ser	Pro	Glu	Ser	Pro	Val	Val	Gln	Leu	His	Ser	Asn	
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Thr	Asp	Ile	Ala	Ser	Leu	Asn	Ile	Gln	Leu	Thr	Cys	Asn	Ile	Leu	Thr	
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Phe	Gly	Gln	Leu	Glu	Gln	Asn	Val	Tyr	Gly	Ile	Thr	Ile	Ile	Ser	Gly	
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Val	Lys	Pro	Asn	Pro	Pro	His	Asn	Leu	Ser	Val	Ile	Asn	Ser	Glu	Glu	
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Val	Ile	Ile	Leu	Lys	Tyr	Asn	Ile	Gln	Tyr	Arg	Thr	Lys	Asp	Ala	Ser	
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Thr	Trp	Ser	Gln	Ile	Pro	Pro	Gln	Asp	Thr	Ala	Ser	Thr	Arg	Ser	Ser	
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Phe	Thr	Val	Gln	Asp	Leu	Lys	Pro	Phe	Thr	Glu	Tyr	Val	Phe	Arg	Ile	
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Arg	Cys	Met	Lys	Glu	Asp	Gly	Lys	Gly	Tyr	Trp	Ser	Asp	Trp	Ser	Glu	
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Gln	Ala	Ser	Gly	Ile	Thr	Tyr	Gln	Asp	Arg	Pro	Ser	Lys	Ala	Pro	Ser	
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Phe	Trp	Tyr	Lys	Ile	Asp	Pro	Ser	His	Thr	Gln	Gly	Tyr	Arg	Thr	Val	
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Gln	Leu	Val	Trp	Lys	Thr	Leu	Pro	Pro	Phe	Gln	Ala	Asn	Gly	Lys	Ile	

Leu	Asp	Tyr	660	Glu	Val	Thr	Leu	Thr	Arg	Trp	Lys	Ser	His	670	Leu	Gln	Asn
Tyr	Thr	Val	675	Asn	Ala	Thr	Lys	Leu	Thr	Val	Asn	Leu	Thr	685	Asn	Asp	Arg
690	Leu	Ala	695	Thr	Leu	Val	Arg	Asn	Leu	Val	Gly	Lys	Ser	700	Asp	Ala	705
Ala	Val	Leu	710	Thr	Ile	Pro	Ala	Cys	Asp	Phe	Gln	Ala	Thr	715	His	Pro	Val
Met	Asp	Leu	725	Lys	Ala	Phe	Pro	Lys	Asp	Asn	Met	Leu	Trp	730	Val	Glu	Trp
Thr	Thr	Pro	740	Arg	Glu	Ser	Val	Lys	Lys	Tyr	Ile	Leu	Glu	745	Trp	Cys	Val
Leu	Ser	Asp	755	Lys	Ala	Pro	Cys	Ile	Thr	Asp	Trp	Gln	Gln	760	Glu	Asp	Gly
Thr	Val	His	770	Arg	Thr	Tyr	Leu	Arg	Gly	Asn	Leu	Ala	Glu	780	Ser	Lys	Cys
Tyr	Leu	Ile	785	Thr	Val	Thr	Pro	Val	Tyr	Ala	Asp	Gly	Pro	790	Gly	Ser	Pro
Glu	Ser	Ile	805	Lys	Ala	Tyr	Leu	Lys	Gln	Ala	Pro	Pro	Ser	810	Lys	Gly	Pro
Thr	Val	Arg	820	Thr	Lys	Lys	Val	Gly	Lys	Asn	Glu	Ala	Val	825	Leu	Glu	Trp
Asp	Gln	Leu	835	Pro	Val	Asp	Val	Gln	Asn	Gly	Phe	Ile	Arg	840	Asn	Tyr	Thr
Ile	Phe	Tyr	850	Arg	Thr	Ile	Ile	Gly	Asn	Glu	Thr	Ala	Val	855	Asn	Val	Asp
Ser	Ser	His	865	Thr	Glu	Tyr	Thr	Leu	Ser	Ser	Leu	Thr	Ser	870	Asp	Thr	Leu
Tyr	Met	Val	885	Arg	Met	Ala	Ala	Tyr	Thr	Asp	Glu	Gly	Gly	890	Lys	Asp	Gly
Pro	Glu	Phe	900	Thr	Phe	Thr	Thr	Pro	Lys	Phe	Ala	Gln	Gly	905	Glu	Ile	Glu
Ser	Gly	Gly	915	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	920	Ala	Pro	Glu
Leu	Leu	Gly	930	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	935	Pro	Lys	Asp
Thr	Leu	Met	945	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	940	Val	Val	Asp
Val	Ser	His	950	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	955	Val	Asp	Gly
Val	Glu	Val	965	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	970	Gln	Tyr	Asn
Ser	Thr	Tyr	980	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	985	Gln	Asp	Trp
Leu	Asn	Gly	995	Lys	Glu	Tyr	Lys	Cys	Lys	Val	Ser	Asn	Lys	1000	Ala	Leu	Pro
Ala	Pro	Ile	1005	Glu	Lys	Thr	Ile	Ser	Lys	Ala	Lys	Gly	Gln	1010	Pro	Arg	Glu
Pro	Gln	Val	1015	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Asp	Glu	Leu	1020	Thr	Lys	Asn
Gln	Val	Ser	1025	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro	1030	Ser	Asp	Ile
Ala	Val	Glu	1035	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn	Tyr	1040	Asn	Lys	Thr
Thr	Pro	Pro	1045	Val	Leu	Asp	Ser	Asp	Gly	Ser	Phe	Phe	Leu	1050	Tyr	Ser	Lys
Leu	Thr	Val	1055	Asp	Lys	Ser	Arg	Trp	Gln	Gln	Gly	Asn	Val	1060	Phe	Ser	Cys
Ser	Val	Met	1065	His	Glu	Ala	Leu	His	Asn	His	Tyr	Thr	Gln	1070	Lys	Ser	Leu
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Gln Ser Asp Ala Ser Glu Arg Cys Asp Asp Trp Gly Leu Asp Thr Met  
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Arg Gln Ile Gln Val Phe Glu Asp Glu Pro Ala Arg Ile Lys Cys Pro  
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Leu Phe Glu His Phe Leu Lys Phe Asn Tyr Ser Thr Ala His Ser Ala  
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ggc ctt act ctg atc tgg tat tgg act agg cag gac cgg gac ctt gag 240  
Gly Leu Thr Leu Ile Trp Tyr Trp Thr Arg Gln Asp Arg Asp Leu Glu  
65 70 75 80  
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Glu Pro Ile Asn Phe Arg Leu Pro Glu Asn Arg Ile Ser Lys Glu Lys  
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Asp Val Leu Trp Phe Arg Pro Thr Leu Leu Asn Asp Thr Gly Asn Tyr  
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115 120 125  
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Leu Glu Val Val Gln Lys Asp Ser Cys Phe Asn Ser Pro Met Lys Leu  
130 135 140  
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Pro Val His Lys Leu Tyr Ile Glu Tyr Gly Ile Gln Arg Ile Thr Cys  
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Ser	Ser	Tyr	Cys	Leu	Arg	Ile	Lys	Ile	Ser	Ala	Lys	Phe	Val	Glu	Met	
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gag	ccg	aac	tta	tgt	tac	aat	gca	caa	gac	ata	ctt	aag	cag	aaa	cta	1440
Glu	Pro	Asn	Leu	Cys	Tyr	Asn	Ala	Gln	Ala	Ile	Phe	Lys	Gln	Lys	Leu	
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ccc	gtt	gca	gga	gac	gga	gga	ctt	gtg	tgc	ccc	tac	atg	gag	ccc	ccc	1488
Pro	Val	Ala	Gly	Asp	Gly	Gly	Leu	Val	Cys	Pro	Tyr	Met	Glu	Phe	Phe	
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aaa	aat	gaa	aat	aat	gag	tta	ccc	aaa	tta	cag	tgg	tat	aag	gat	tgc	1536
Lys	Asn	Glu	Asn	Asn	Glu	Leu	Pro	Lys	Leu	Gln	Trp	Tyr	Lys	Asp	Cys	
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Lys	Pro	Leu	Leu	Leu	Asp	Asn	Ile	His	Phe	Ser	Gly	Val	Lys	Asp	Arg	
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Ser	Asp	Gly	Ser	Phe	Phe	Leu	Tyr	Ser	Lys	Leu	Thr	Val	Asp	Lys	Ser	
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Val	Asp	Gly	Val	625	Glu	Val	His	Asn	Ala	630	Lys	Thr	Lys	Pro	Arg	Glu
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	770					775					780				
Lys	Ser	Leu	Ser	Leu	Ser	Pro	Gly	Lys							
785					790										

FIRST CLASS MAIL CERTIFICATE

I hereby certify that this document is being deposited with the United States Postal Service on this date as first class mail addressed to: U.S. Patent and Trademark Office, Box Sequence, P.O. Box 2327, Arlington, VA 22202.

Bernadette B. Fahey  
Bernadette B. Fahey

July 30, 2002  
Date

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application Of : Neil Stahl, et al.  
USPN : 09/787,835  
Int'l File No.: : PCT/US99/22045  
Int'l File Date: : September 22, 1999  
For : RECEPTOR BASED ANTAGONISTS, AND  
METHODS OF MAKING AND USING  
Examiner : Unknown  
Group : Unknown

July 30, 2002

Commissioner for Patents  
U.S. Patent and Trademark Office  
Box Sequence, P.O. Box 2327  
Arlington, VA 22202

**Transmittal of Sequence Listing**

Sir:

In response to the May 30, 2002 Notification of Missing Requirements Under 35 U.S.C. 371 In The United States Designated/Elected Office (DO/EO/US) ("Notification"), Applicants enclose herewith as Exhibit 1: copy of the May 30, 2002, Notification, Exhibit 2: Sequence Listings in paper and computer-readable forms, Exhibit 3: copy of concurrently filed Amendment and Response to May 30, 2002, Notification (without exhibits) for the above-referenced patent application. A

response to the May 30, 2002 Office Communication is due on July 30, 2002, and, therefore, this response is being timely filed.

Applicants direct the subject Sequence Listings submitted herewith be added to the specification.

I hereby state that the content of the paper and computer readable copies of the Sequence Listing, submitted in accordance with 37 C.F.R §1.821(c) and (e) respectively, are the same. I hereby state that the content of the paper and computer readable copies of the Sequence Listing submitted herewith and referred to herein in accordance with 37 C.F.R. § 1.821(g), contain no new matter.

No fee is deemed necessary for filing this paper. However, if any fees are deemed necessary, the Commissioner is hereby authorized to charge any such fees required by this paper to Deposit Account No. 18-0650.

Respectfully submitted,

---

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UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	Inventor	Attorney
Linda O Palladino	Neil Stahl	REG 203677S

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PCITUS 02045	
Examination	Administrative
02/21/02	02/21/02

CONFIRMATION NO. 8053

371 FORMALITIES LETTER



\*00000000009077730\*

Date Mailed: 11/08/2002

## NOTIFICATION OF DEFECTIVE RESPONSE

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as an Elected Office (37 CFR 1.495):

- U.S. Basic National Fee
- Priority Document
- Copy of IPE Report
- Copy of references cited in ISR
- Copy of the International Application
- Copy of the International Search Report
- Information Disclosure Statements
- Oath or Declaration
- Preliminary Amendments
- Request for Immediate Examination

Applicant's response filed 03/22/2001 is hereby acknowledged. The following requirements set forth in the NOTIFICATION of MISSING REQUIREMENTS mailed 05/30/2002 have not been completed:

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

**Applicant is required to complete the response within a time limit of ONE MONTH from the date of this Notification or within the time remaining in the response set forth in the Notification of Missing Requirements, whichever is the longer. No extension of this time limit may be granted under 37 CFR 1.136, but the period for response set in the Notification of Missing Requirements may be extended under 37 CFR 1.136(a).**

The following items **MUST** be furnished within the period set forth below:

- The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 CFR 1.821-1.825 for the following reasons:

- This application does not contain a "Sequence Listing" as a separate part of the disclosure on paper copy or compact disc, as required by 37 CFR 1.821(c).
  - A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 CFR 1.821(e).
  - APPLICANT MUST PROVIDE:
    - An initial or substitute computer readable form (CRF) of the "Sequence Listing."
    - An initial or substitute paper copy or compact disc of the "Sequence Listing," as well as an amendment directing its entry into the specification.
- For questions regarding compliance to 37 CFR 1.821-1.825 requirements, please contact:
- For Rules Interpretation, call (703) 308-4216
  - To Purchase PatentIn Software, call (703) 306-2600
  - For PatentIn Software Program Help, call (703) 306-4119 or e-mail at [patin21help@uspto.gov](mailto:patin21help@uspto.gov) or [patin3help@uspto.gov](mailto:patin3help@uspto.gov)
- This application does not contain a "Sequence Listing" as a separate part of the disclosure on paper copy or compact disc, as required by 37 CFR 1.821(c).
  - A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 CFR 1.821(e).

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

*A copy of this notice **MUST** be returned with the response.*

SHAKELI AHMED

Telephone: (703) 305-3659

PART 1 - ATTORNEY/APPLICANT COPY

U.S. APPLICATION NO.	INTERNATIONAL APPLICATION NO.	CLASSIFICATION
00/000000	PCT/US99/22045	RI 02 000000